

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-16 (Canceled).

Claim 17 (New): A process for preparing one or more iodinated organic substances having a molecular mass of less than 2000 (substances (S)) using:

(A) at least one free-radical-generating substance chosen from peroxides, diazo compounds, dialkyldiphenylalkanes, substances derived from tetraphenylethane, boranes and iniferter substances comprising at least one thiuram disulphide group,

(B) at least one organic substance containing at least one ethylenic double bond, capable of adding a free radical to its ethylenic double bond,

(C) molecular iodine,

which comprises the steps according to which:

(1) at least a fraction of (A), at least a fraction of (B) and at least a fraction of (C) are introduced into a reactor, and then

(2) the contents of the reactor are caused to react, while introducing therein the possible remainder of (A), the possible remainder of (B) and the possible remainder of (C), until a moment is reached when the content of the reactor is a mixture comprising one or more substances (S) [mixture (M)].

Claim 18 (New): The process according to Claim 17, wherein the substance(s) (S) have a molecular mass of less than 1000.

Claim 19 (New): The process according to Claim 17, wherein the substance(s) (S) have a number-average molecular mass of less than 500.

Claim 20 (New): The process according to Claim 17, wherein the contents of the reactor are caused to react until the quantity of (B) consumed by the reaction no longer changes.

Claim 21 (New): The process according to Claim 20, wherein the number of moles of (C) expressed relative to the number of moles (A) is greater than or equal to 100%.

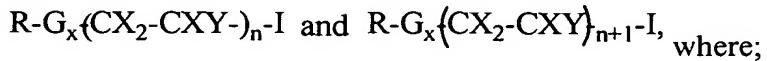
Claim 22 (New): The process according to Claim 17, wherein it additionally comprises a step (3), following step (2), according to which the reaction in progress is stopped.

Claim 23 (New): The process according to Claim 22, wherein the moment when the reaction in progress is stopped is that when the colour of the contents of the reactor changes from a dark colour to a light colour.

Claim 24 (New): The process according to Claim 22, wherein the number of moles of (C) expressed relative to the number of moles of (A) is less than 100%.

Claim 25 (New): The process according to Claim 17, wherein it additionally comprises a step, following step (2) and, furthermore, following step (3), when the process comprises the said step (3), according to which at least one substance (S) of the mixture (M) and possible other substances (S) contained in the mixture (NI) are isolated.

Claim 26 (New): A mixture comprising at least 2 iodinated organic substances having a molecular mass of less than 2000, corresponding respectively to the general formulae



- R represents (i) a hydrogen atom, (ii) an atom of an alkali metal, (iii) a linear or branched C₁-C₂₀ alkyl group optionally substituted with one or more groups chosen from phenyl, carboxyl, hydroxyl, nitrile, amine or amidine groups, (iv) a C₃-C₈ cycloalkyl group optionally substituted with one or more groups chosen from C₁-C₈ alkyl groups and the nitrile group, or (v) a phenyl group, optionally substituted with one or more groups chosen from the C₁-C₈ alkyl groups and halogen atoms other than the iodine atom;
- x represents an integer equal to 0 or 1;
- G represents -O-, -O-C(=O)-O-, -C(=O)-O- or -O-S(=O)_p-O-;
 - if G is a group -C(=O)-O-, then its fragment C(=O) is linked to R and its fragment O linked to a group CX₂;
- p represents an integer equal to 1 or 2;
- n represents an integer equal to 1 to 8;
- the groups X represent, independently of each other and of Y, (i) a hydrogen atom, (ii) a halogen atom other than an iodine atom, or (iii) a linear or branched C₁-C₂₀ alkyl group;
- Y represents (i) a halogen atom other than an iodine atom,
 - (ii) a phenyl group optionally substituted with one or more atoms chosen from halogen atoms other than the iodine atom and C₁-C₈ alkyl groups, (iii) a group -O-C(=O)-Z,
 - (iv) a nitrile group, (v) a group -C(=O)-O-Z, or (vi) a group -C(=O)-NZ₂;
- Z represents (i) a hydrogen atom, or (ii) a saturated or ethylenically unsaturated or aromatic C₁-C₂₀ hydrocarbon group;

- R, G, x, CX₂-CXY and n are identical for the 2 substances which are the subject of the invention;
 - I is an iodine atom
- [substances (S2)].

Claim 27 (New): The mixture according to Claim 26, wherein the substances (S2) have a number-average molecular mass of less than 500,

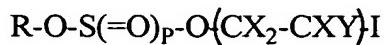
Claim 28 (New): A iodinated organic substance having a molecular mass of less than 2000, corresponding to the general formula R-G_x{CX₂-CXY}_q-I,
with R, G, X, Y and I as defined in Claim 26 and where q represents an integer greater than 1 and less than 10.

Claim 29 (New): The iodinated organic substance according to Claim 28, having a molecular mass of less than 1000.

Claim 30 (New): A iodinated organic substance having a molecular mass of less than 2000, corresponding to the general formula
 $R-O-C(=O)-\{CX_2-CXY\}I$
with R, X, Y and I as defined in Claim 26.

Claim 31 (New): The iodinated organic substance according to Claim 30, having a molecular mass of less than 1000.

Claim 32 (New): A iodinated organic substance having a molecular mass of less than 2000, corresponding to the general formula



with R, X, Y, I and p as defined in Claim 26.

Claim 33 (New): The iodinated organic substance according to Claim 32, having a molecular mass of less than 1000.

Claim 34 (New): A process for preparing a polymer by free-radical polymerization of at least one ethylenically unsaturated monomer, using in the polymerization:

- (A') the ethylenically unsaturated monomer,
- (B') at least one free-radical-generating agent chosen from peroxides, diazo compounds, dialkyldiphenylalkanes, substances derived from tetraphenylethane, boranes, iniferter substances comprising at least one thiuram disulphide group, styrene and styrene substances, and ultraviolet radiation,
- (C') one or more substances chosen from the substances (S), the substances (S2) and the substances according to Claim 28, and,
 - optionally in addition,
- (D') at least one complex of a metal chosen from transition metals, lanthanides, actinides and group IIIa metals, and of a ligand of this metal.

Claim 35 (New): A process for preparing a polymer by free-radical polymerization of at least one ethylenically unsaturated monomer, using in the polymerization:

- (A') the ethylenically unsaturated monomer,

(B') at least one free-radical-generating agent chosen from peroxides, diazo compounds, dialkyldiphenylalkanes, substances derived from tetraphenylethane, boranes, iniferter substances comprising at least one thiuram disulphide group, styrene and styrene substances, and ultraviolet radiation,

(C') one or more substances chosen from the substances (S), the substances (S2) and the substances according to Claim 30, and,

optionally in addition,

(D') at least one complex of a metal chosen from transition metals, lanthanides, actinides and group IIIa metals, and of a ligand of this metal.

Claim 36 (New): A process for preparing a polymer by free-radical polymerization of at least one ethylenically unsaturated monomer, using in the polymerization;

(A') the ethylenically unsaturated monomer,

(B') at least one free-radical-generating agent chosen from peroxides, diazo compounds, dialkyldiphenylalkanes, substances derived from tetraphenylethane, boranes, iniferter substances comprising at least one thiuram disulphide group, styrene and styrene substances, and ultraviolet radiation,

(C') one or more substances chosen from the substances (S), the substances (S2) and the substances according to Claim 32, and,

optionally in addition,

(D') at least one complex of a metal chosen from transition metals, lanthanides, actinides and group IIIa metals, and of a ligand of this metal.